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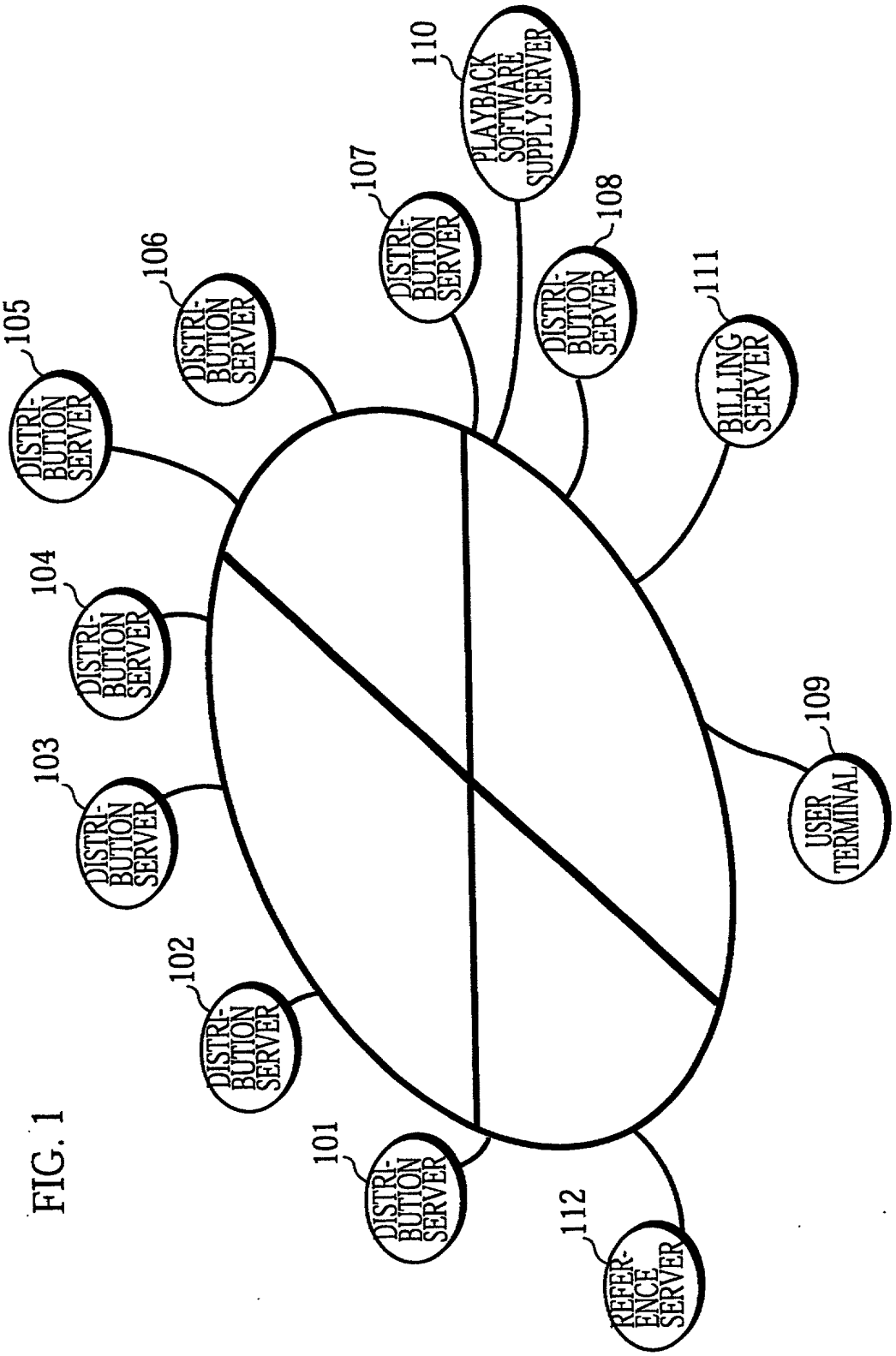

FIG. 1

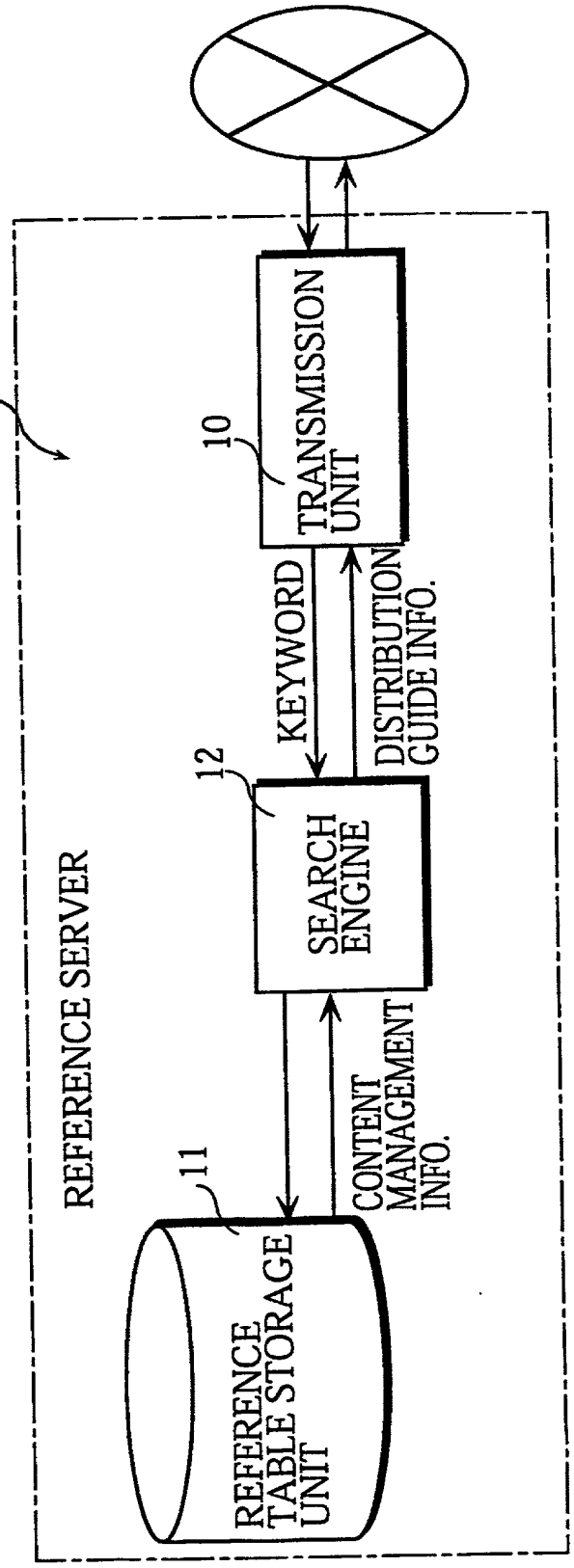
112
REFERENCE SERVER
10
TRANSMISSION UNIT
KEYWORD
DISTRIBUTION GUIDE INFO.
12
SEARCH ENGINE
CONTENT MANAGEMENT INFO.
11
REFERENCE TABLE STORAGE UNIT

FIG. 2

FIG. 3A

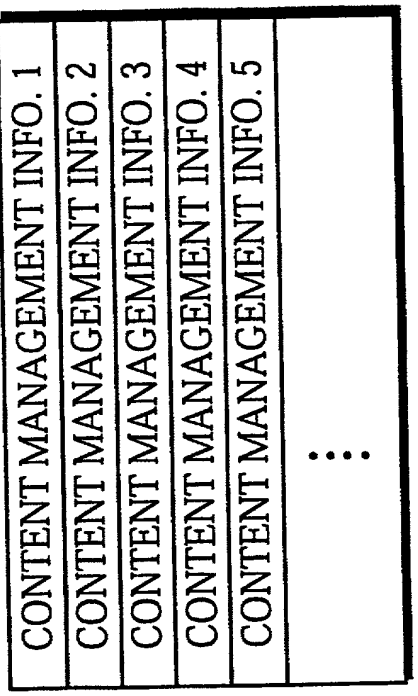
REFERENCE TABLE
CONTENT MANAGEMENT INFO. 1
CONTENT MANAGEMENT INFO. 2
CONTENT MANAGEMENT INFO. 3
CONTENT MANAGEMENT INFO. 4
CONTENT MANAGEMENT INFO. 5
...

FIG. 3B

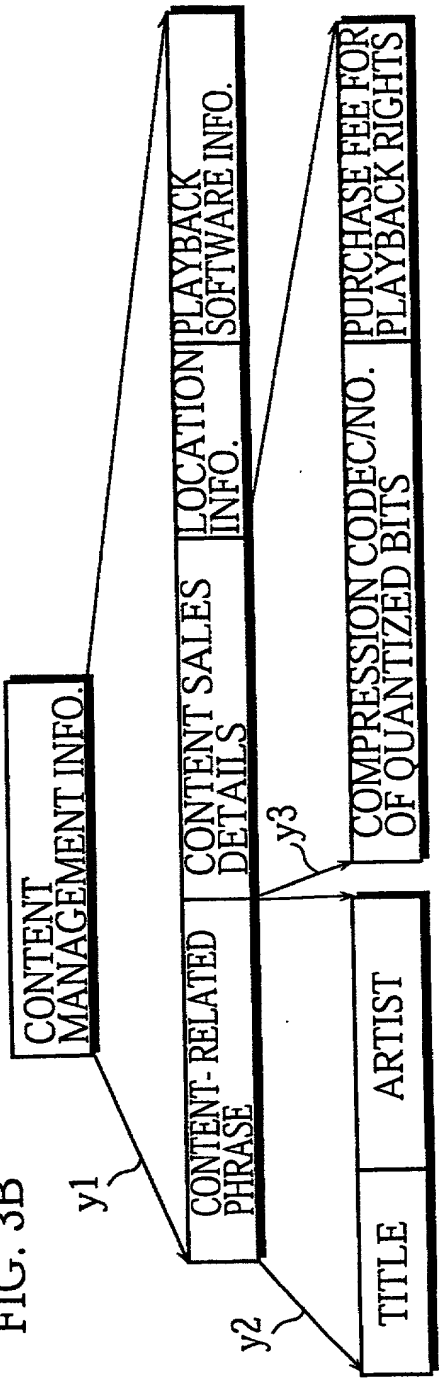
CONTENT MANAGEMENT INFO.
y1
CONTENT-RELATED PHRASE
CONTENT SALES DETAILS
LOCATION INFO.
PLAYBACK SOFTWARE INFO.
y3
COMPRESSION CODEC/NO. OF QUANTIZED BITS
PURCHASE FEE FOR PLAYBACK RIGHTS
y2
TITLE
ARTIST

FIG. 4

EXAMPLE OF REFERENCE TABLE

TITLE	ARTIST	COMPRESSION CODEC/NO. OF QUANTIZED BITS	PURCHASE FEE FOR PLAYBACK RIGHTS	SERVER LOCATION INFO.	PLAYBACK SOFTWARE INFO.
Poor Minor	Mr.Artist1	AAC • 128kbps	$3.00	URL OF SERVER 101	PLAYBACK SOFTWARE A
Yet Breaker	Ms.Artist2	AAC • 96kbps	$1.50	URL OF SERVER 102	PLAYBACK SOFTWARE B
Star on BusStop	Mrs.Artist3	Mp3 • 128kbps	$1.50	URL OF SERVER 103	PLAYBACK SOFTWARE C
Forgotten Hero	Sir.Artist4	AAC • 128kbps	$3.00	URL OF SERVER 104	PLAYBACK SOFTWARE A
Local SuperStar	Artist5 Jr.	AAC • 96kbps	$1.50	URL OF SERVER 105	PLAYBACK SOFTWARE C
Nightmare Come True	Mr.Artist6	AAC • 128kbps	$3.00	URL OF SERVER 106	PLAYBACK SOFTWARE A
Field of BlackHall	Sir.Artist7	Mp3 • 128kbps	$1.00	URL OF SERVER 107	PLAYBACK SOFTWARE B

FIG. 5

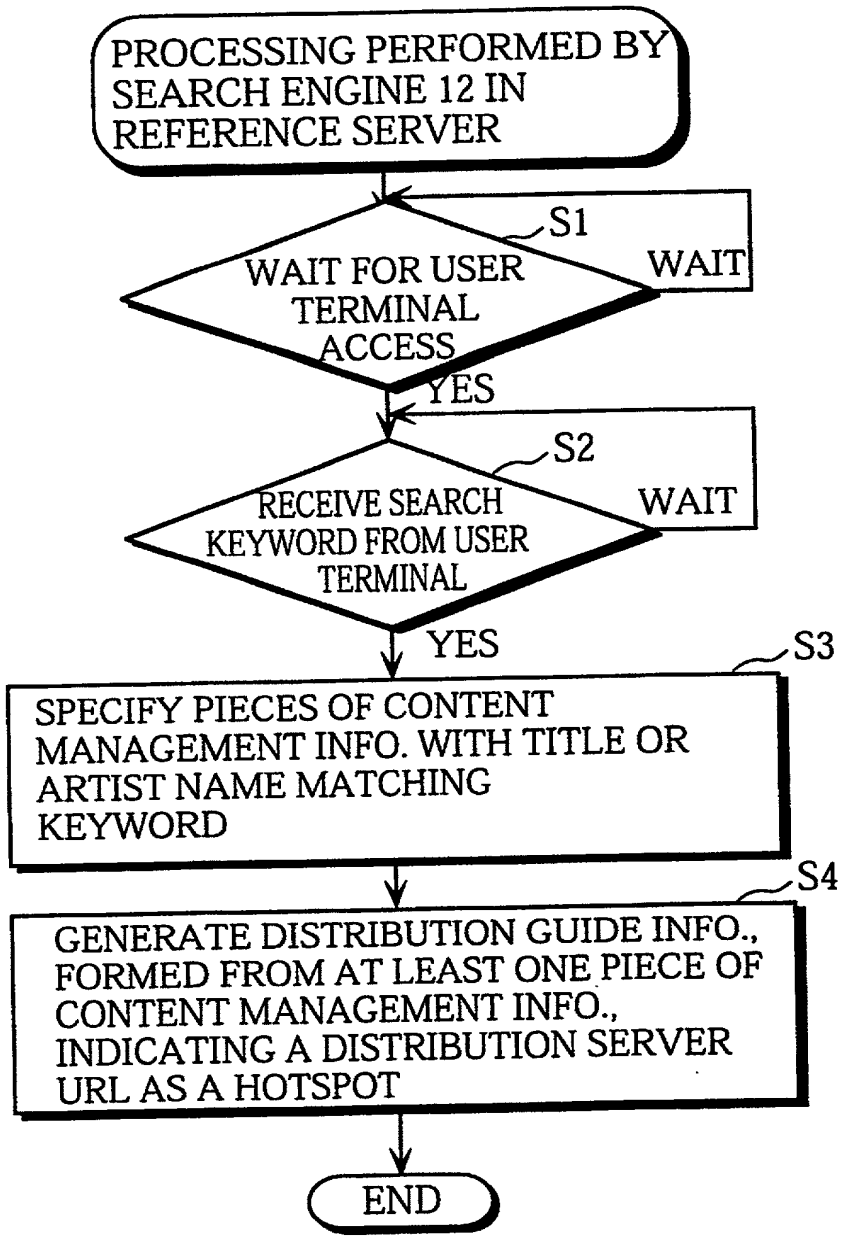
PROCESSING PERFORMED BY SEARCH ENGINE 12 IN REFERENCE SERVER
S1
WAIT FOR USER TERMINAL ACCESS
WAIT
YES
S2
RECEIVE SEARCH KEYWORD FROM USER TERMINAL
WAIT
YES
S3
SPECIFY PIECES OF CONTENT MANAGEMENT INFO. WITH TITLE OR ARTIST NAME MATCHING KEYWORD
S4
GENERATE DISTRIBUTION GUIDE INFO., FORMED FROM AT LEAST ONE PIECE OF CONTENT MANAGEMENT INFO., INDICATING A DISTRIBUTION SERVER URL AS A HOTSPOT
END

FIG. 6A

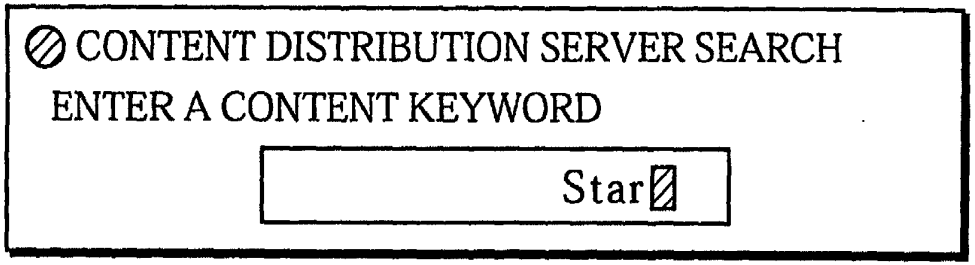

FIG. 6B

DISTRIBUTION GUIDE INFO.

Star on BusStop	Mrs.Artist3	Mp3 • 128kbps	$ 1.50	URL OF SERVER 103	PLAYBACK SOFTWARE C
Local SuperStar	Artist5 Jr.	AAC • 96kbps	$ 1.50	URL OF SERVER 105	PLAYBACK SOFTWARE C

FIG. 6C

RESULTS OF CONTENT DISTRIBUTION SERVER SEARCH

SEARCH RESULTS ARE AS FOLLOWS.

TITLE	ARTIST	COMPRESSION CODEC/NO. OF QUANTIZED BITS	PURCHASE FEE FOR PLAYBACK RIGHTS	SERVER LOCATION INFO.	PLAYBACK SOFTWARE INFO.
Star on BusStop	Artist3	Mp3 • 128kbps	$ 1.50	URL OF SERVER 103	PLAYBACK SOFTWARE C
Local SuperStar	Artist5	AAC • 96kbps	$ 1.50	URL OF SERVER 105	PLAYBACK SOFTWARE C

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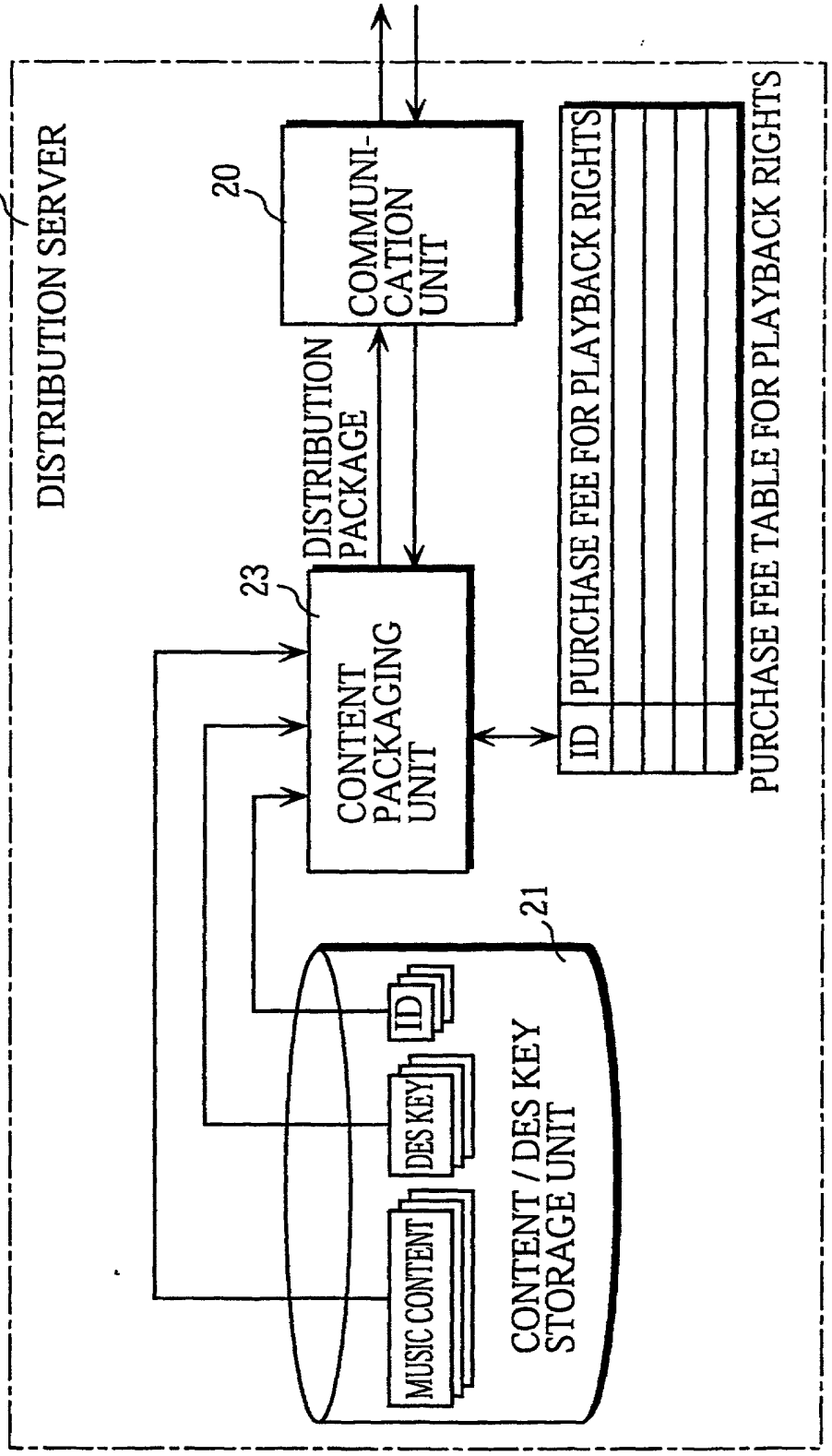
FIG. 7


101~108
DISTRIBUTION SERVER
20
COMMUNI-CATION UNIT
DISTRIBUTION PACKAGE
23
CONTENT PACKAGING UNIT
ID
PURCHASE FEE FOR PLAYBACK RIGHTS
PURCHASE FEE TABLE FOR PLAYBACK RIGHTS
21
ID
DES KEY
MUSIC CONTENT
CONTENT / DES KEY STORAGE UNIT

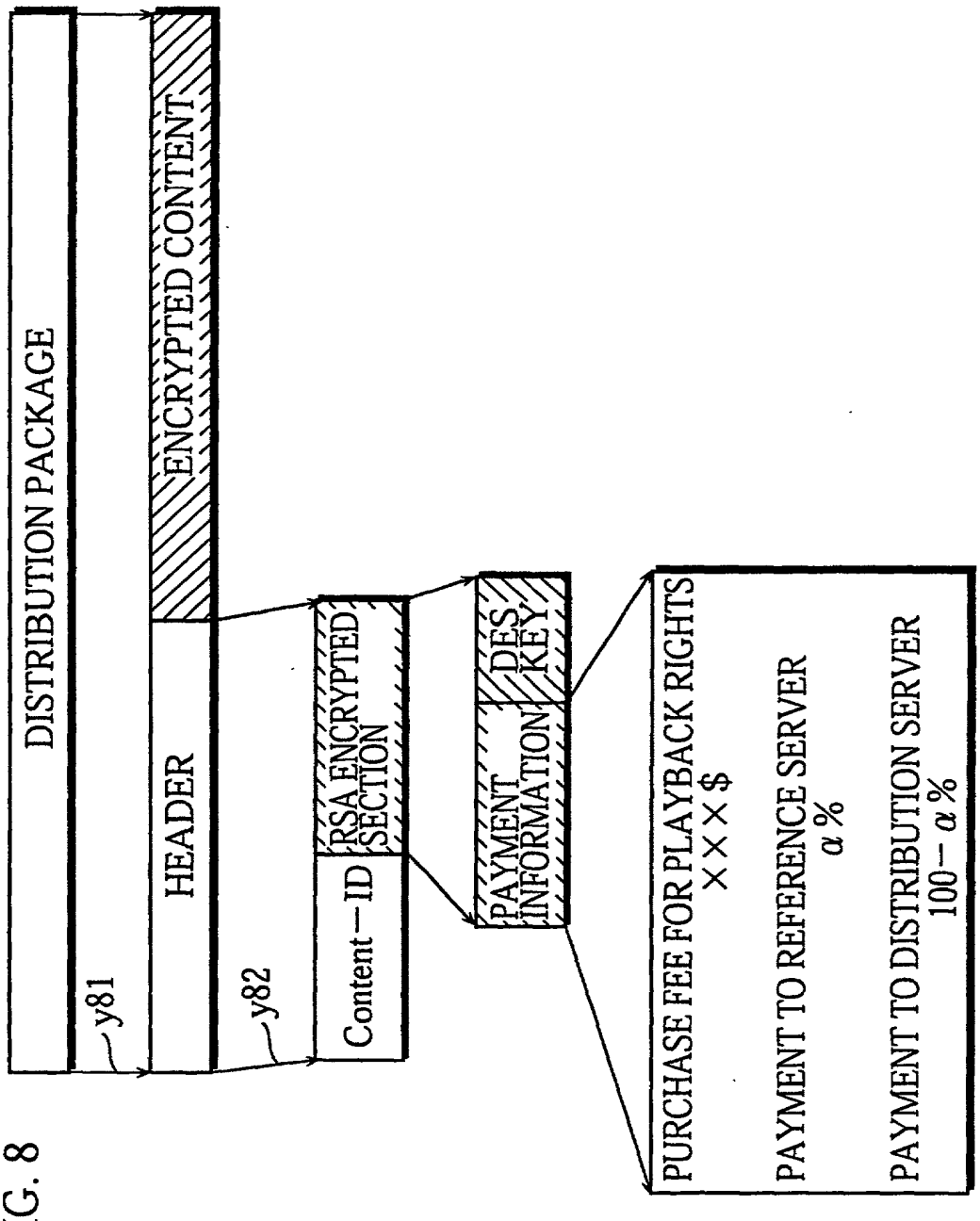

DISTRIBUTION PACKAGE
y81
HEADER
ENCRYPTED CONTENT
y82
Content—ID
RSA ENCRYPTED SECTION
PAYMENT INFORMATION
DES KEY
PURCHASE FEE FOR PLAYBACK RIGHTS
×××$
PAYMENT TO REFERENCE SERVER
α %
PAYMENT TO DISTRIBUTION SERVER
100− α %

FIG. 8

FIG. 9

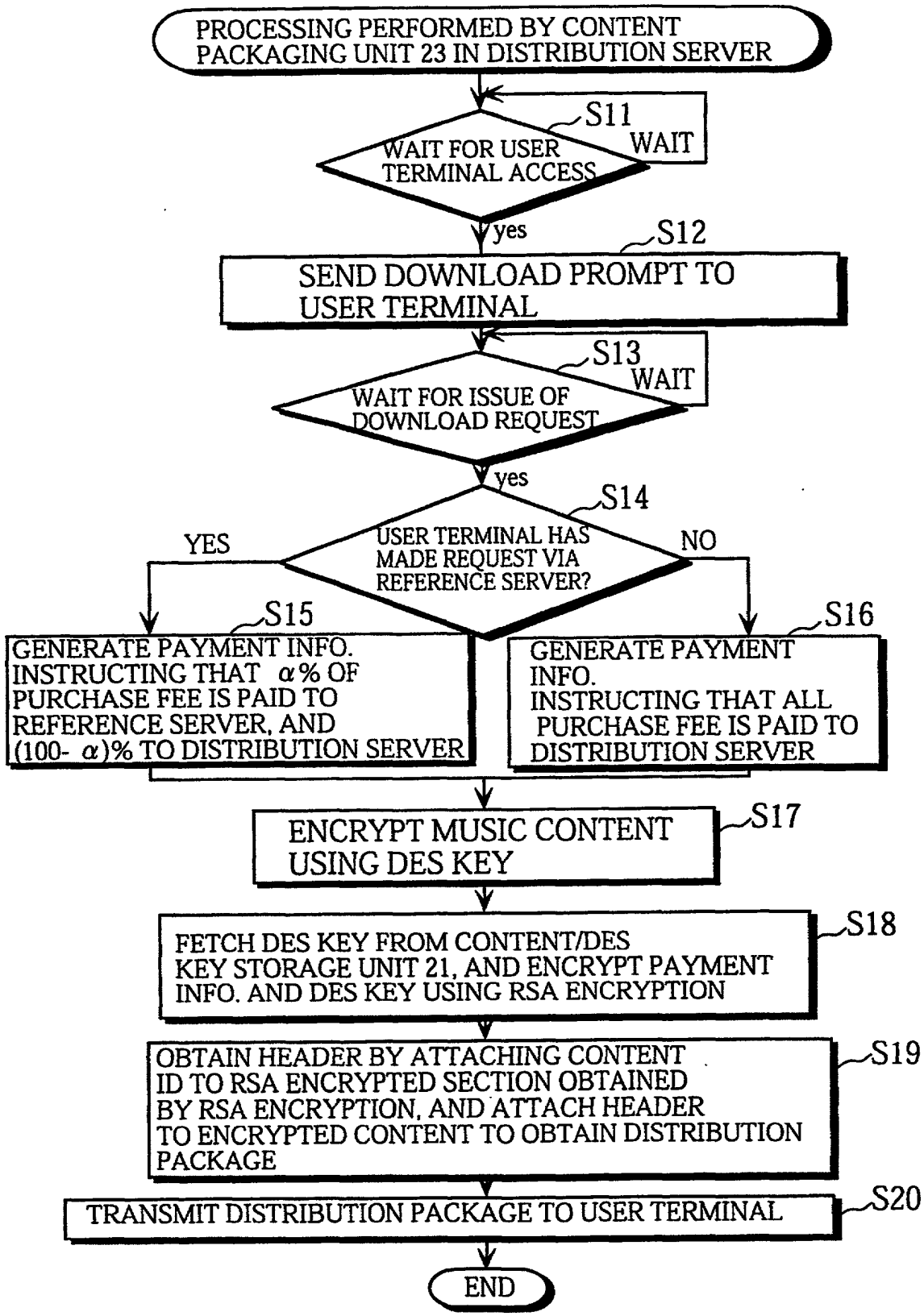

PROCESSING PERFORMED BY CONTENT PACKAGING UNIT 23 IN DISTRIBUTION SERVER
S11
WAIT FOR USER TERMINAL ACCESS
WAIT
yes
S12
SEND DOWNLOAD PROMPT TO USER TERMINAL
S13
WAIT FOR ISSUE OF DOWNLOAD REQUEST
WAIT
yes
S14
USER TERMINAL HAS MADE REQUEST VIA REFERENCE SERVER?
YES
NO
S15
GENERATE PAYMENT INFO. INSTRUCTING THAT α% OF PURCHASE FEE IS PAID TO REFERENCE SERVER, AND (100- α)% TO DISTRIBUTION SERVER
S16
GENERATE PAYMENT INFO. INSTRUCTING THAT ALL PURCHASE FEE IS PAID TO DISTRIBUTION SERVER
S17
ENCRYPT MUSIC CONTENT USING DES KEY
S18
FETCH DES KEY FROM CONTENT/DES KEY STORAGE UNIT 21, AND ENCRYPT PAYMENT INFO. AND DES KEY USING RSA ENCRYPTION
S19
OBTAIN HEADER BY ATTACHING CONTENT ID TO RSA ENCRYPTED SECTION OBTAINED BY RSA ENCRYPTION, AND ATTACH HEADER TO ENCRYPTED CONTENT TO OBTAIN DISTRIBUTION PACKAGE
S20
TRANSMIT DISTRIBUTION PACKAGE TO USER TERMINAL
END

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FIG. 10

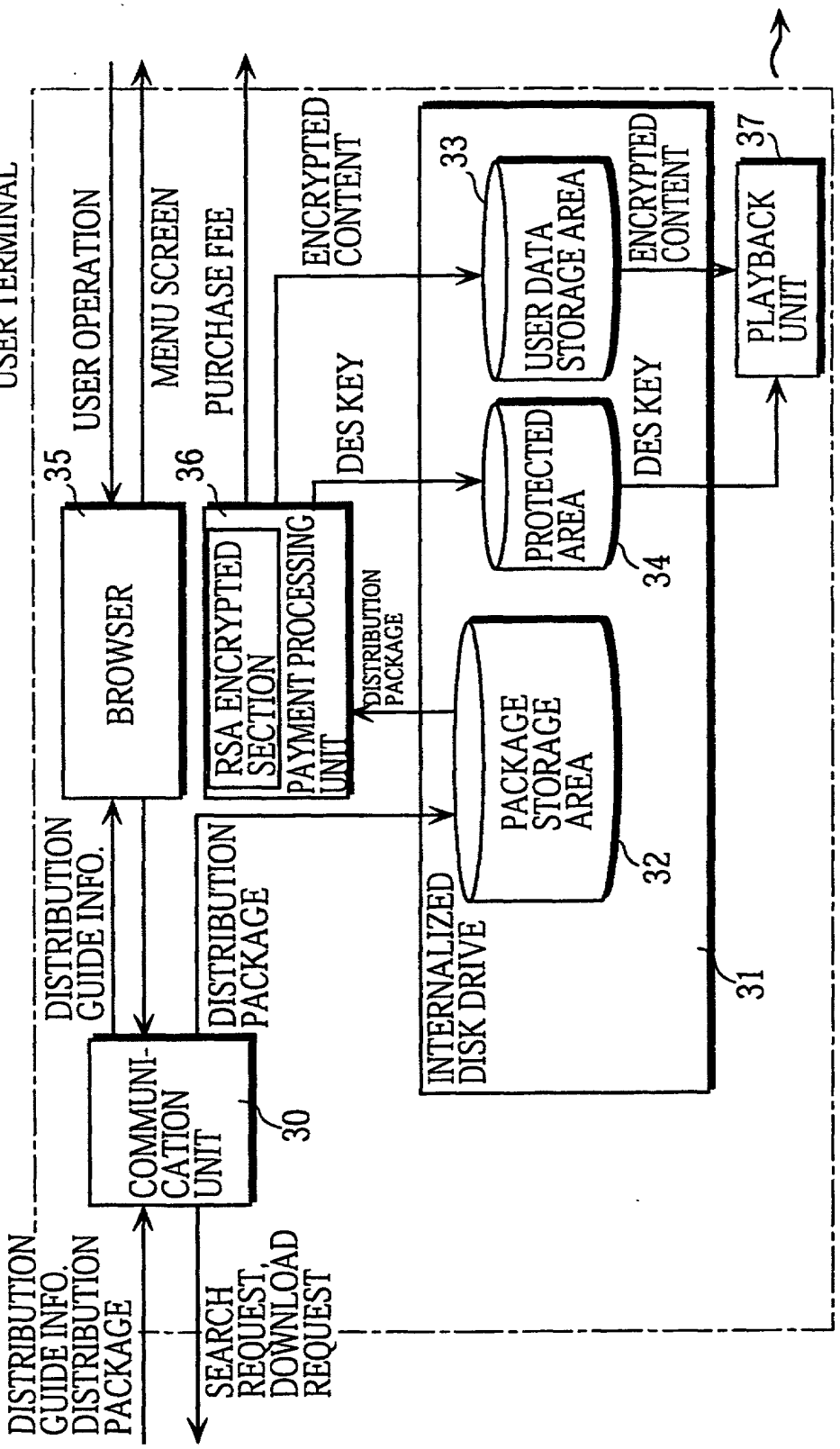

FIG. 11

INDEX NO.	CONTENT ID	PACKAGE STORAGE LOCATION INFO.
1	USMEI9900001	C:/package/Song1
2	USMEI9903402	C:/package/Song2
3	JPMEI9900001	C:/package/Song3
4	JPMEI9800001	C:/package/Song4
5	USMEI9912345	C:/package/Song5
6	USMEI9900001	C:/package/Song6
7	UKMEI971344	C:/package/Song7

PACKAGE MANAGEMENT TABLE

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FIG. 12

INDEX NO.	CONTENT STORAGE LOCATION INFO.	PURCHASE STATUS INFO.	KEY STORAGE LOCATION INFO.
1	C:/AudioData/Song1	PURCHASED	C:/Key/Song1
2	C:/AudioData/Song2	PURCHASED	C:/Key/Song2
3	————	UNPURCHASED	————
4	C:/AudioData/Song4	PURCHASED	C:/Key/Song4
5	————	UNPURCHASED	————
6	C:/AudioData/Song6	PURCHASED	C:/Key/Song6
7	C:/AudioData/Song7	PURCHASED	C:/Key/Song7

PURCHASE INFO. MANAGEMENT TABLE

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FIG. 13

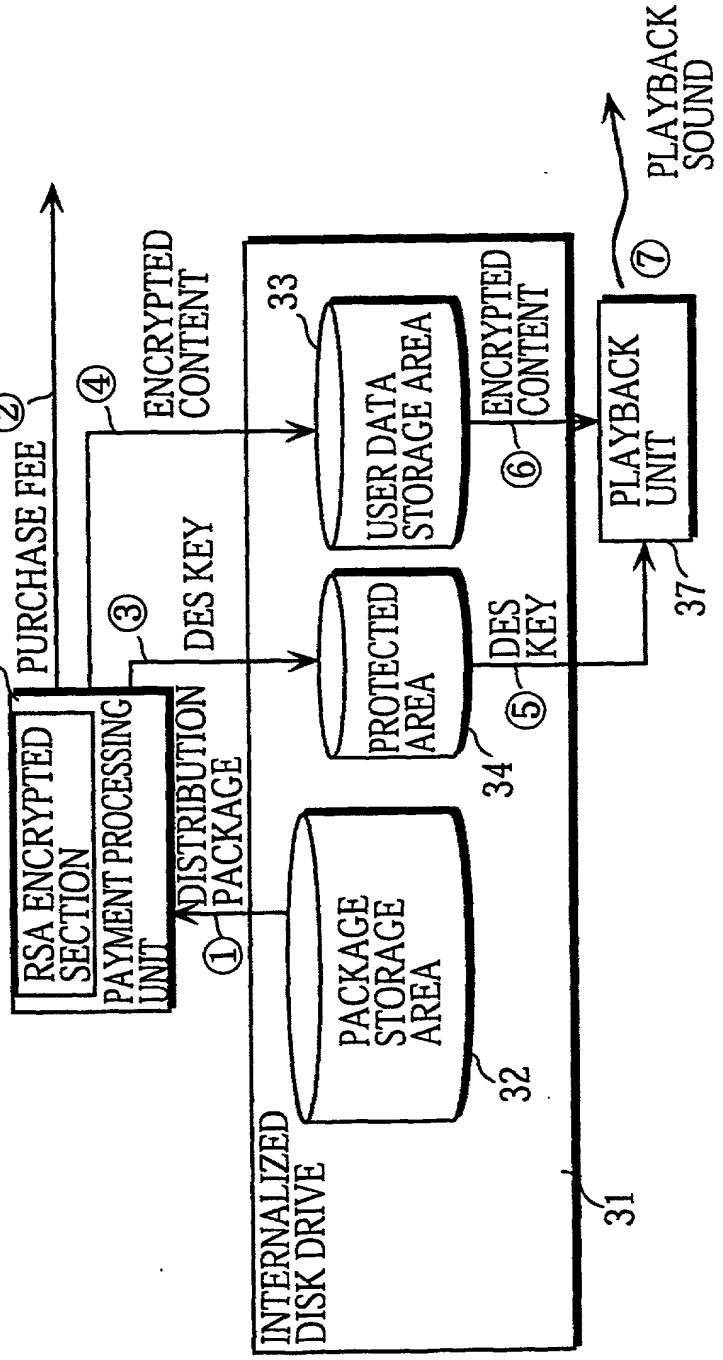


FIG. 14

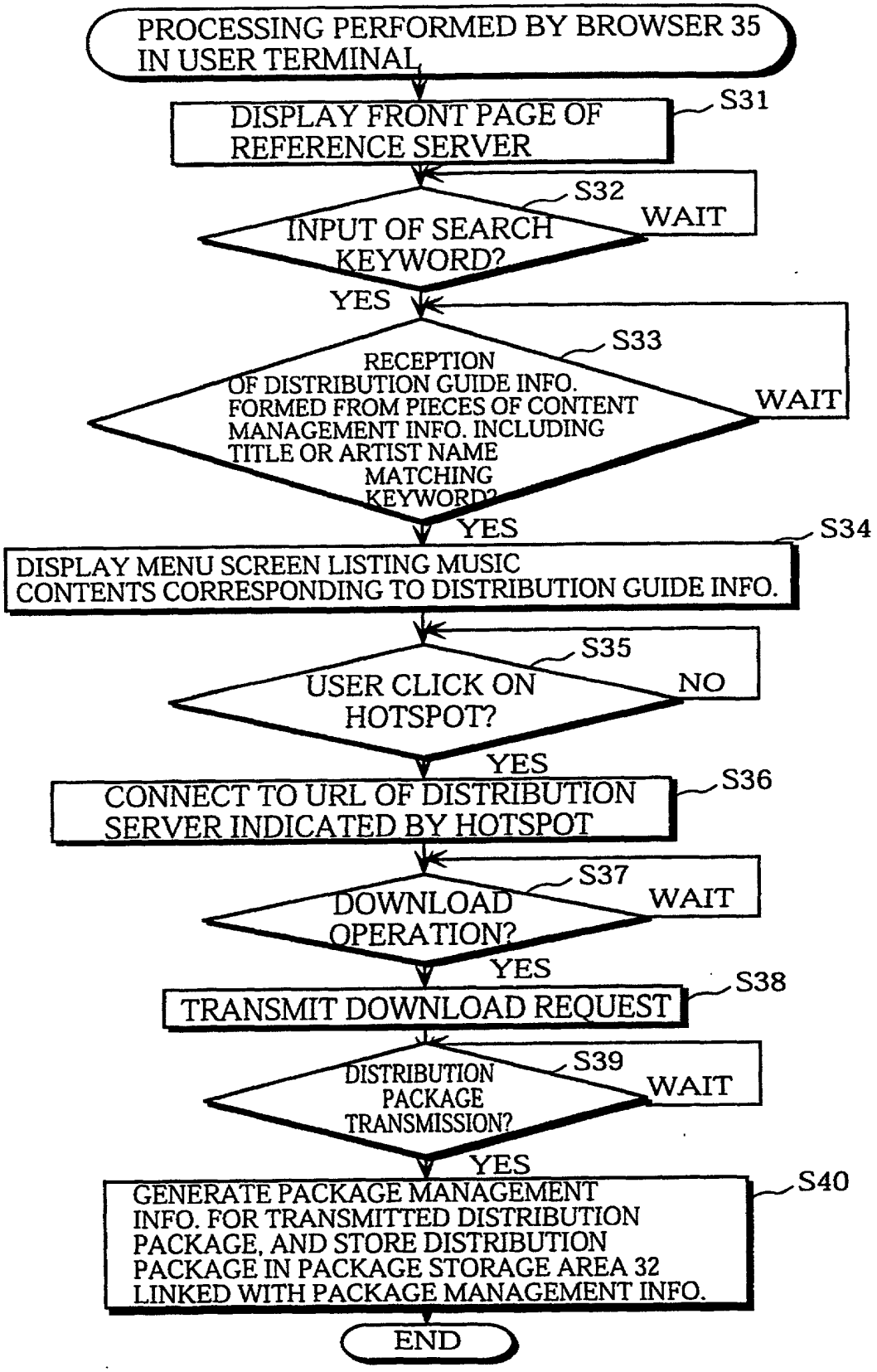
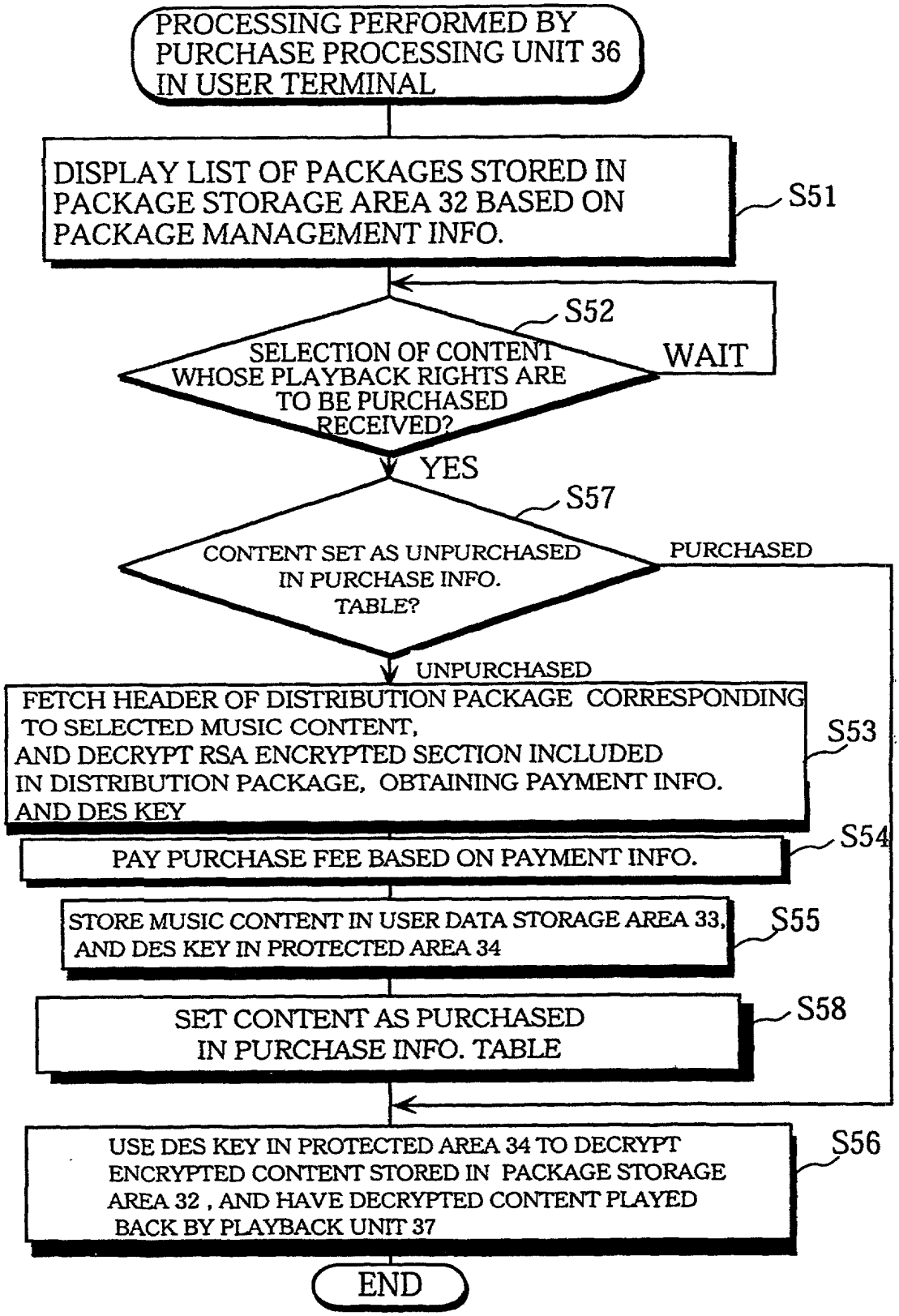

PROCESSING PERFORMED BY BROWSER 35 IN USER TERMINAL
DISPLAY FRONT PAGE OF REFERENCE SERVER
S31
S32
INPUT OF SEARCH KEYWORD?
WAIT
YES
S33
RECEPTION OF DISTRIBUTION GUIDE INFO. FORMED FROM PIECES OF CONTENT MANAGEMENT INFO. INCLUDING TITLE OR ARTIST NAME MATCHING KEYWORD?
WAIT
YES
S34
DISPLAY MENU SCREEN LISTING MUSIC CONTENTS CORRESPONDING TO DISTRIBUTION GUIDE INFO.
S35
USER CLICK ON HOTSPOT?
NO
YES
CONNECT TO URL OF DISTRIBUTION SERVER INDICATED BY HOTSPOT
S36
S37
DOWNLOAD OPERATION?
WAIT
YES
TRANSMIT DOWNLOAD REQUEST
S38
S39
DISTRIBUTION PACKAGE TRANSMISSION?
WAIT
YES
GENERATE PACKAGE MANAGEMENT INFO. FOR TRANSMITTED DISTRIBUTION PACKAGE, AND STORE DISTRIBUTION PACKAGE IN PACKAGE STORAGE AREA 32 LINKED WITH PACKAGE MANAGEMENT INFO.
S40
END

FIG. 15


PROCESSING PERFORMED BY PURCHASE PROCESSING UNIT 36 IN USER TERMINAL
DISPLAY LIST OF PACKAGES STORED IN PACKAGE STORAGE AREA 32 BASED ON PACKAGE MANAGEMENT INFO.
S51
S52
SELECTION OF CONTENT WHOSE PLAYBACK RIGHTS ARE TO BE PURCHASED RECEIVED?
WAIT
YES
S57
CONTENT SET AS UNPURCHASED IN PURCHASE INFO. TABLE?
PURCHASED
UNPURCHASED
FETCH HEADER OF DISTRIBUTION PACKAGE CORRESPONDING TO SELECTED MUSIC CONTENT, AND DECRYPT RSA ENCRYPTED SECTION INCLUDED IN DISTRIBUTION PACKAGE, OBTAINING PAYMENT INFO. AND DES KEY
S53
PAY PURCHASE FEE BASED ON PAYMENT INFO.
S54
STORE MUSIC CONTENT IN USER DATA STORAGE AREA 33, AND DES KEY IN PROTECTED AREA 34
S55
SET CONTENT AS PURCHASED IN PURCHASE INFO. TABLE
S58
USE DES KEY IN PROTECTED AREA 34 TO DECRYPT ENCRYPTED CONTENT STORED IN PACKAGE STORAGE AREA 32 , AND HAVE DECRYPTED CONTENT PLAYED BACK BY PLAYBACK UNIT 37
S56
END

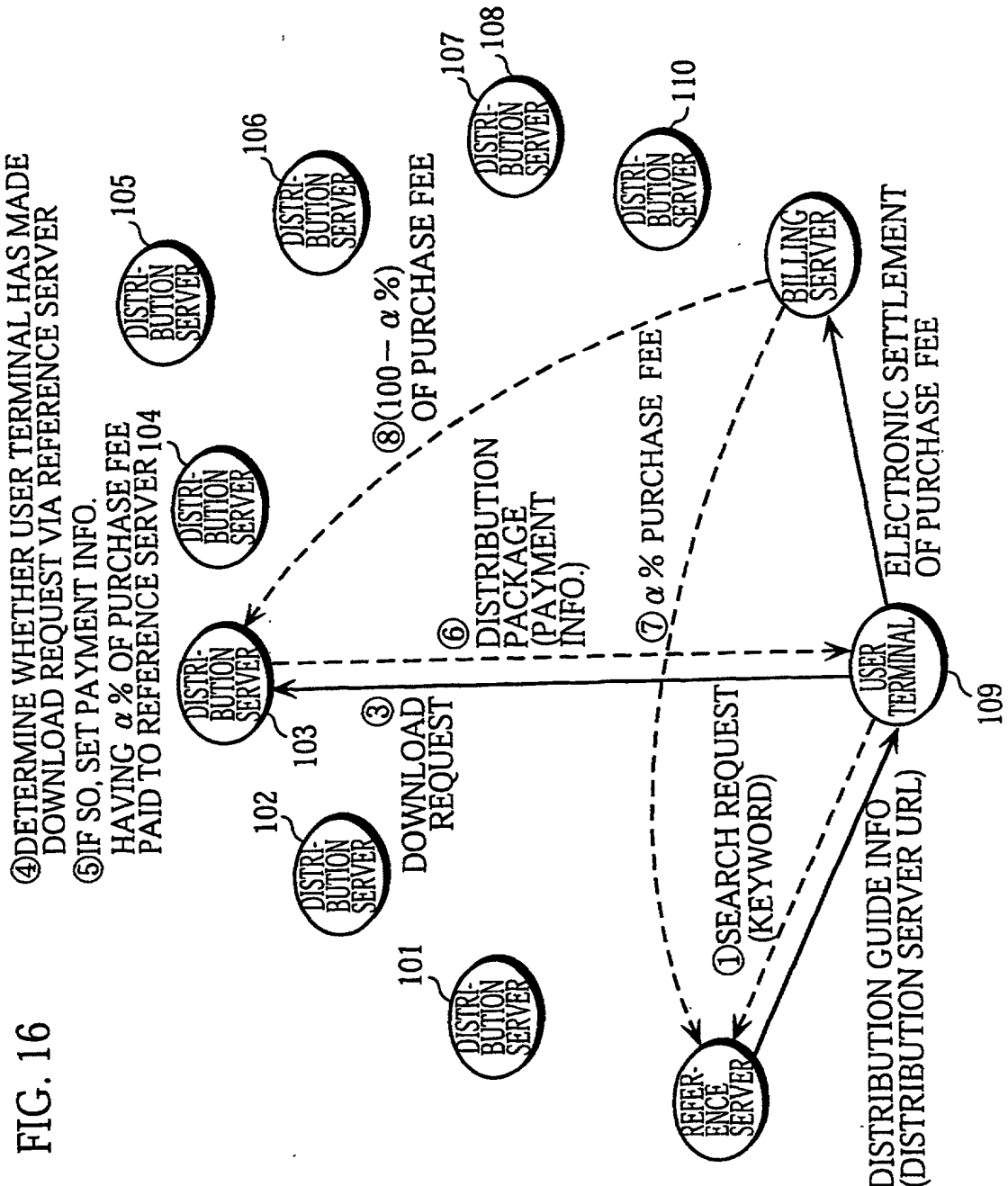

④DETERMINE WHETHER USER TERMINAL HAS MADE DOWNLOAD REQUEST VIA REFERENCE SERVER
⑤IF SO, SET PAYMENT INFO. HAVING α % OF PURCHASE FEE PAID TO REFERENCE SERVER 104
⑧(100− α %) OF PURCHASE FEE
⑥ DISTRIBUTION PACKAGE (PAYMENT INFO.)
⑦ α % PURCHASE FEE
③ DOWNLOAD REQUEST
①SEARCH REQUEST (KEYWORD)
②DISTRIBUTION GUIDE INFO (DISTRIBUTION SERVER URL)
ELECTRONIC SETTLEMENT OF PURCHASE FEE
DISTRI-BUTION SERVER
101
102
103
105
106
107
108
110
REFER-ENCE SERVER
USER TERMINAL
109
BILLING SERVER

FIG. 16

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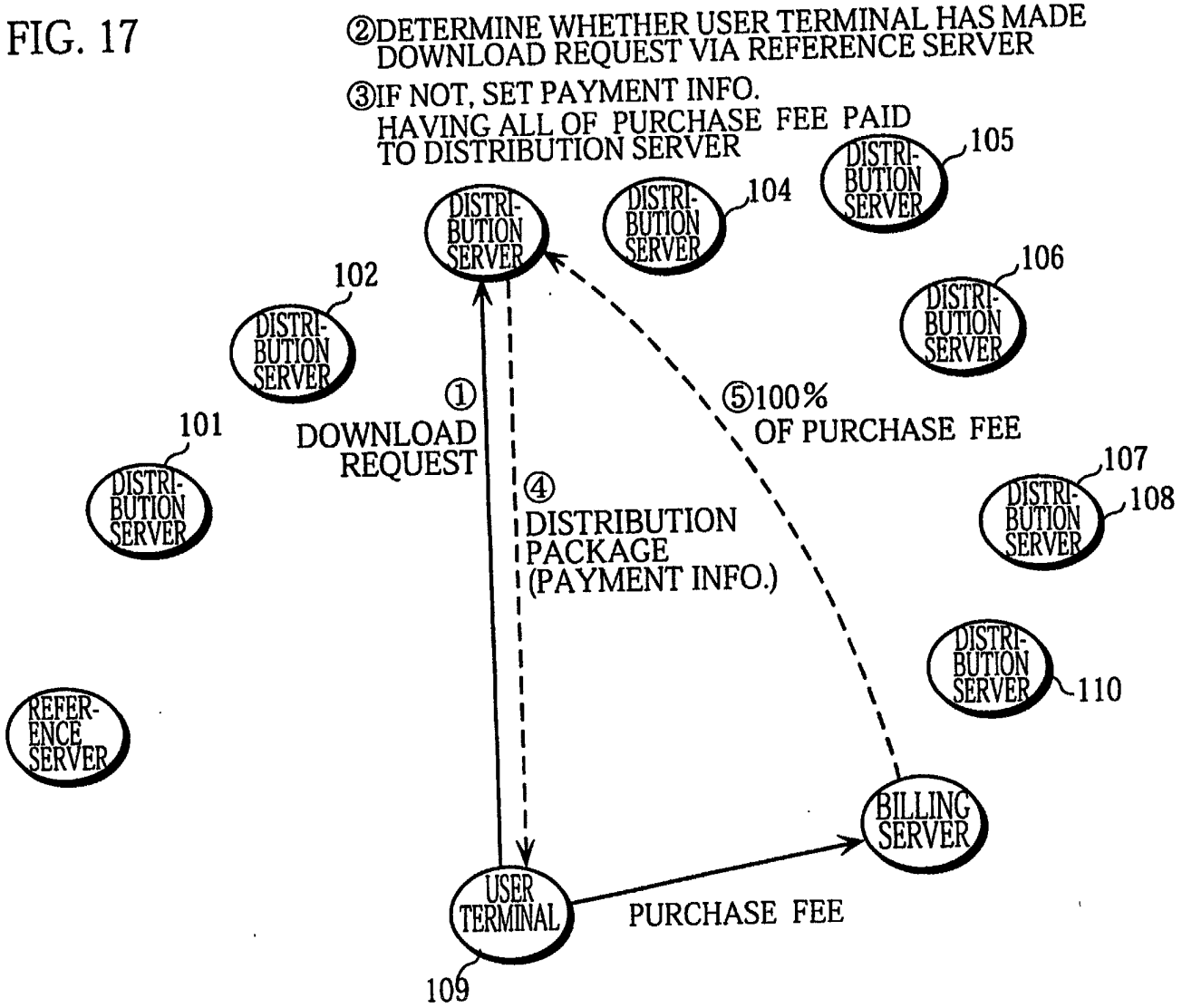
FIG. 17



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PCT/US00/32756

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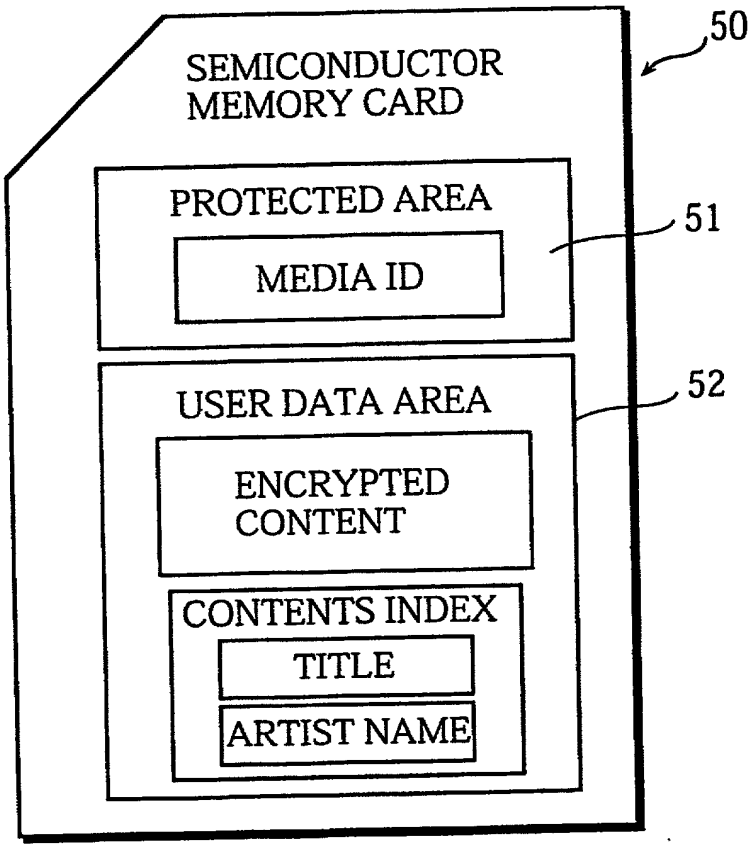
FIG. 18


SEMICONDUCTOR MEMORY CARD
50
PROTECTED AREA
MEDIA ID
51
USER DATA AREA
52
ENCRYPTED CONTENT
CONTENTS INDEX
TITLE
ARTIST NAME

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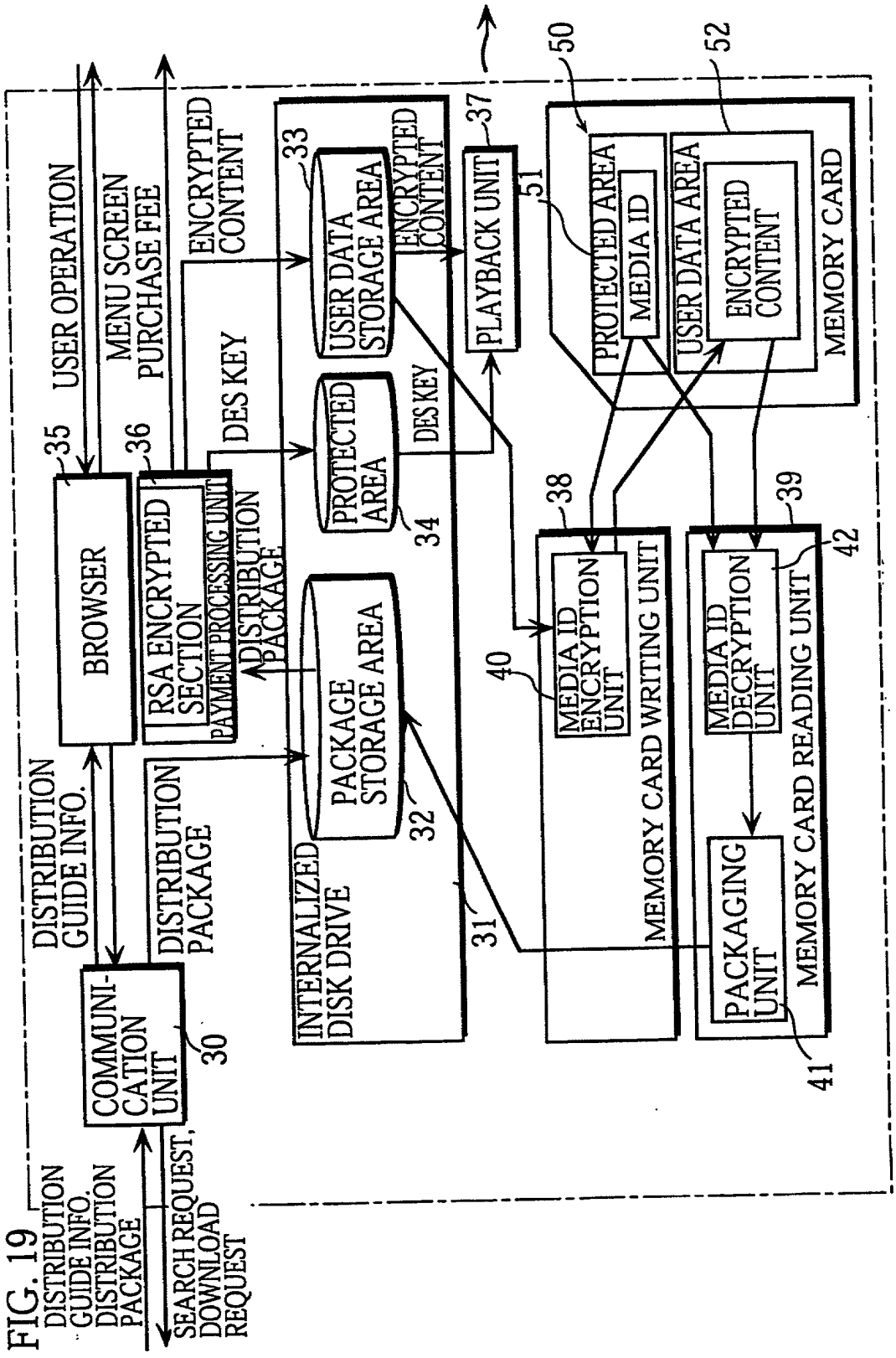


FIG. 19

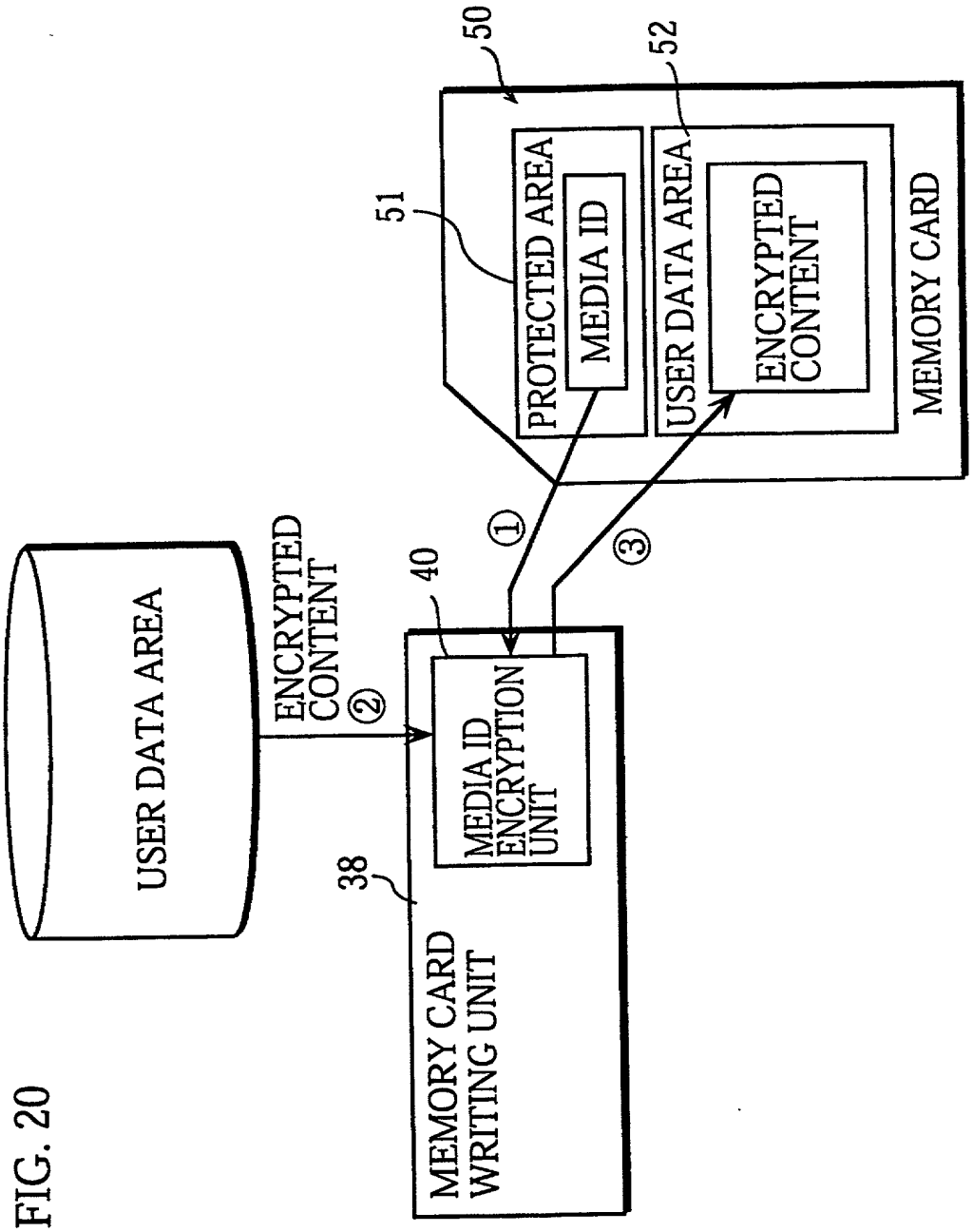

50
52
51
PROTECTED AREA
MEDIA ID
USER DATA AREA
ENCRYPTED CONTENT
MEMORY CARD
①
③
40
ENCRYPTED CONTENT
②
USER DATA AREA
MEDIA ID ENCRYPTION UNIT
38
MEMORY CARD WRITING UNIT

FIG. 20

FIG. 21

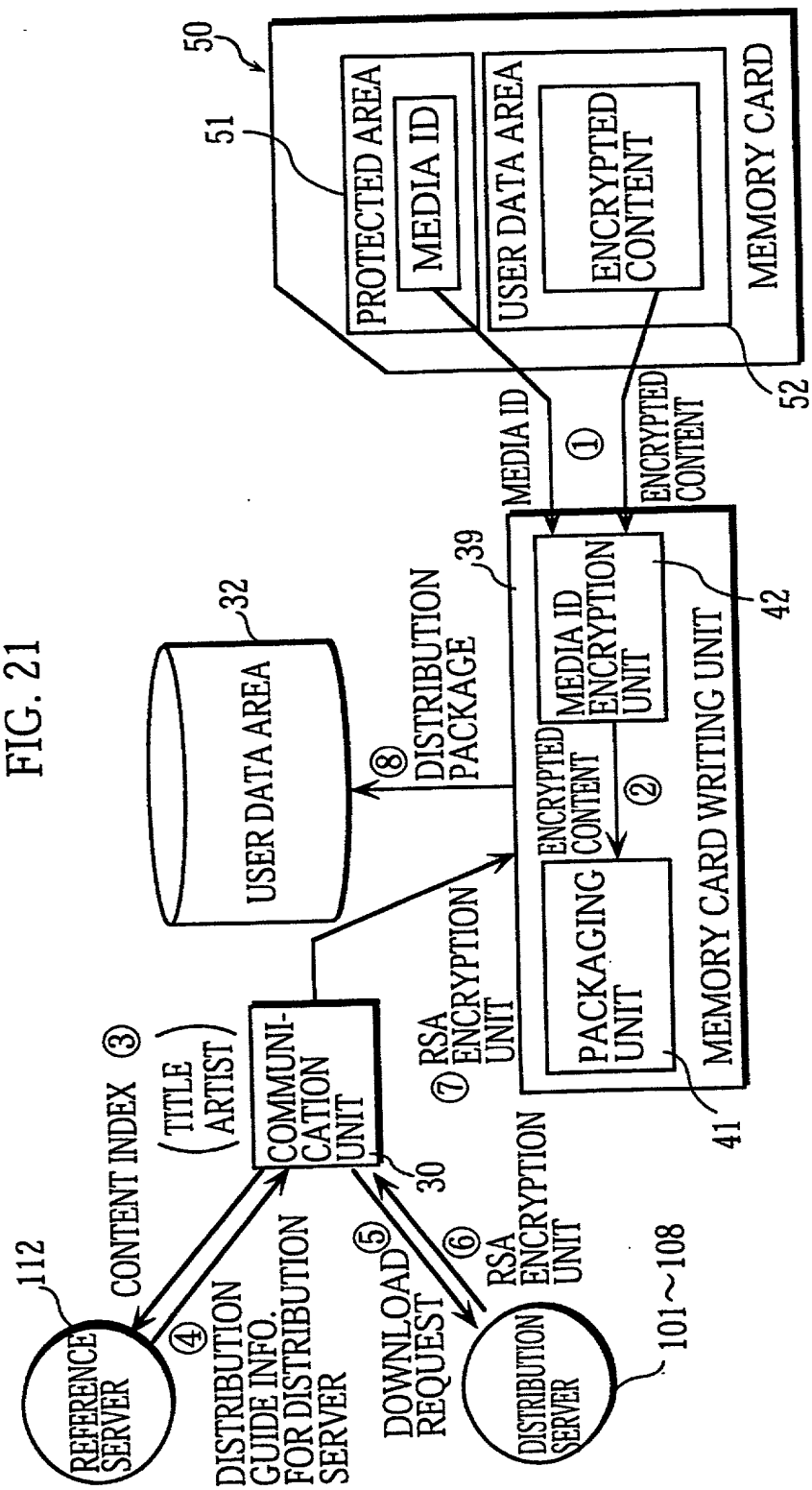

50
51
PROTECTED AREA
MEDIA ID
USER DATA AREA
ENCRYPTED CONTENT
MEMORY CARD
52
MEDIA ID
①
ENCRYPTED CONTENT
39
MEDIA ID ENCRYPTION UNIT
42
ENCRYPTED CONTENT
②
PACKAGING UNIT
MEMORY CARD WRITING UNIT
41
⑦ RSA ENCRYPTION UNIT
⑧ DISTRIBUTION PACKAGE
32
USER DATA AREA
COMMUNI-CATION UNIT
30
③ CONTENT INDEX (TITLE ARTIST)
④ DISTRIBUTION GUIDE INFO. FOR DISTRIBUTION SERVER
⑤ DOWNLOAD REQUEST
⑥ RSA ENCRYPTION UNIT
112
REFERENCE SERVER
DISTRIBUTION SERVER
101~108

FIG. 22

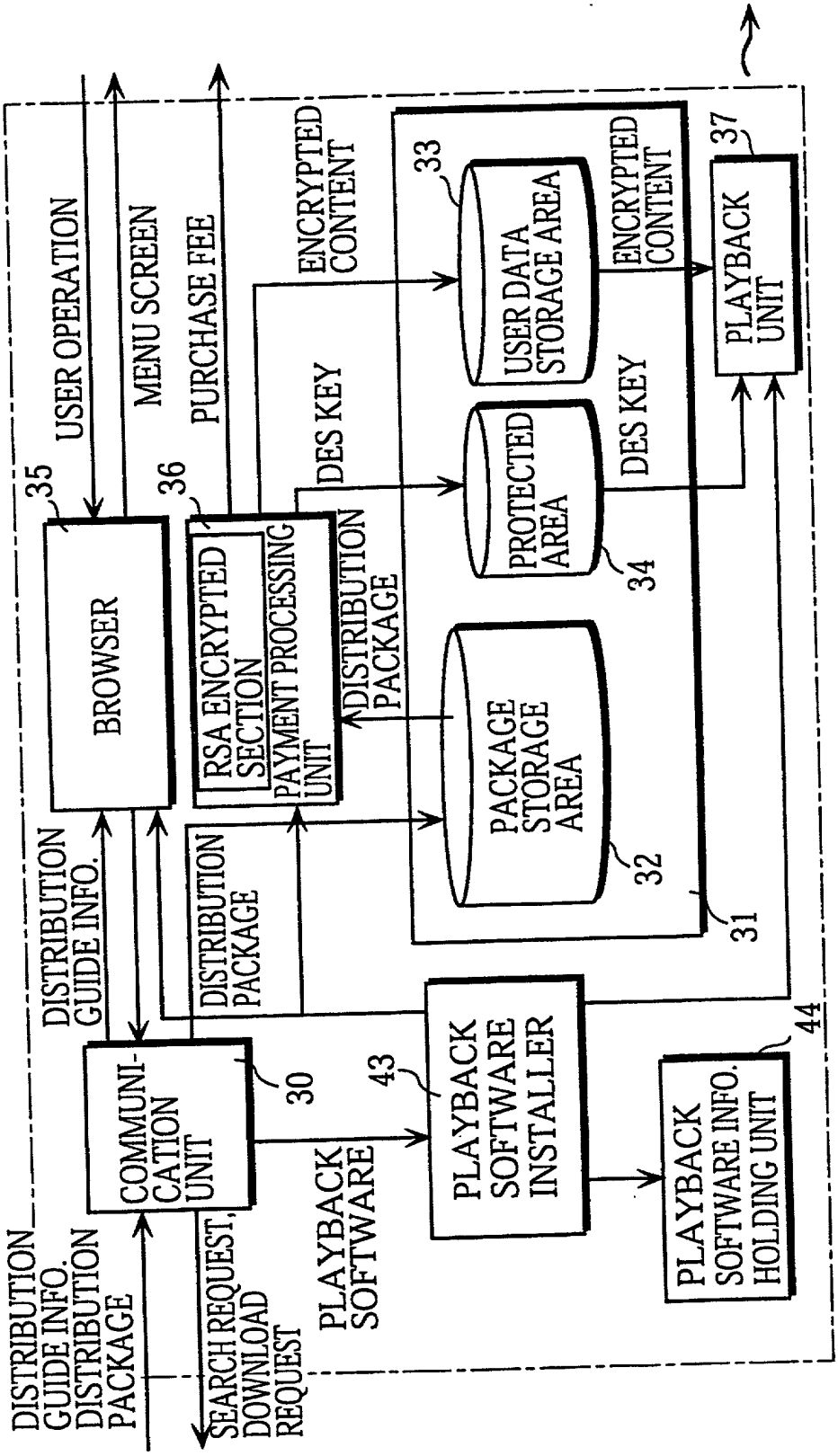

DISTRIBUTION GUIDE INFO. DISTRIBUTION PACKAGE
SEARCH REQUEST, DOWNLOAD REQUEST
PLAYBACK SOFTWARE
COMMUNI-CATION UNIT
30
BROWSER
35
USER OPERATION
MENU SCREEN
RSA ENCRYPTED SECTION PAYMENT PROCESSING UNIT
36
PURCHASE FEE
DISTRIBUTION GUIDE INFO.
DISTRIBUTION PACKAGE
DISTRIBUTION PACKAGE
DES KEY
ENCRYPTED CONTENT
PACKAGE STORAGE AREA
32
PROTECTED AREA
34
DES KEY
USER DATA STORAGE AREA
33
ENCRYPTED CONTENT
PLAYBACK UNIT
37
31
PLAYBACK SOFTWARE INSTALLER
43
PLAYBACK SOFTWARE HOLDING UNIT
44

FIG. 23

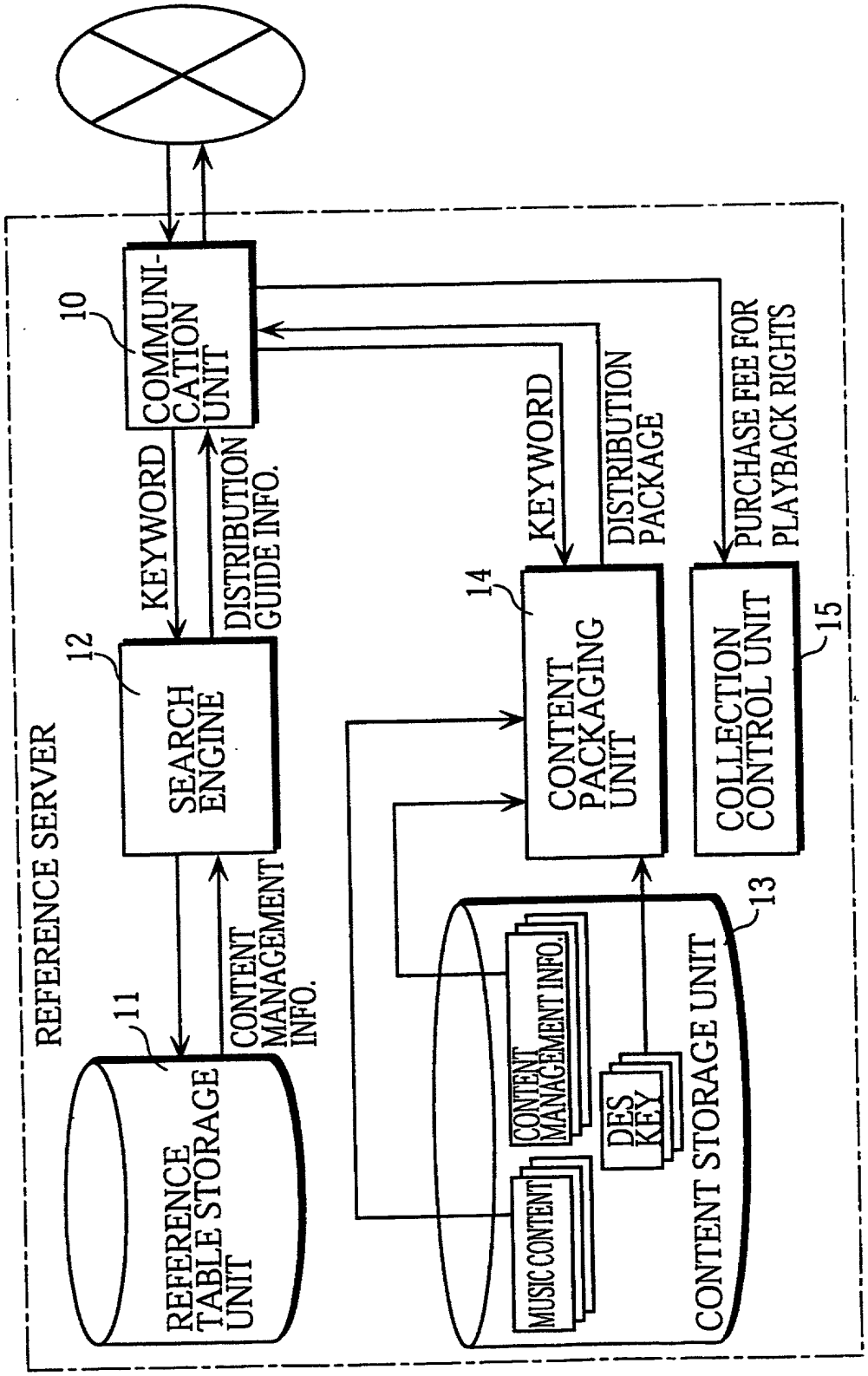
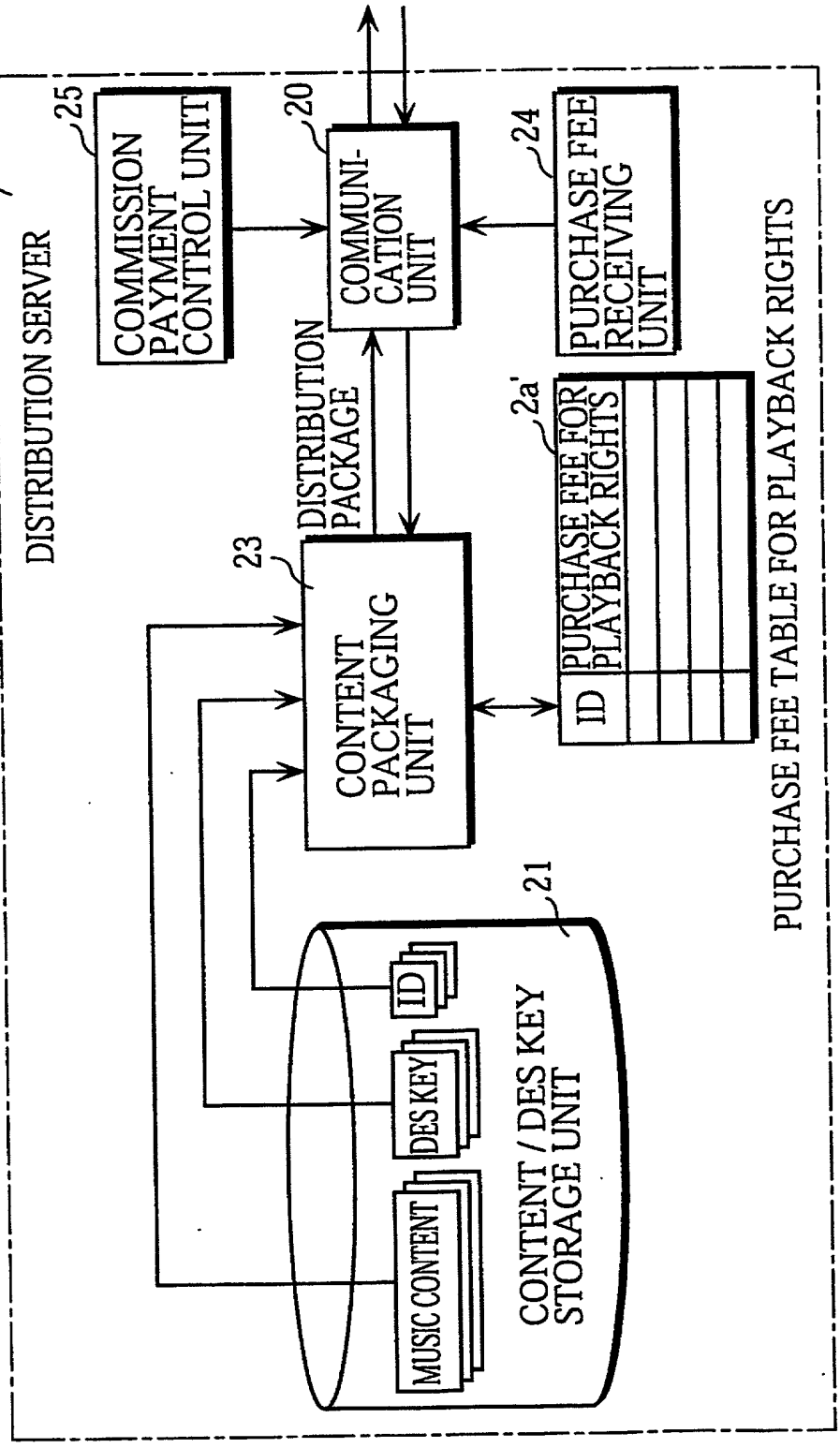

REFERENCE SERVER
10
COMMUNI-CATION UNIT
KEYWORD
DISTRIBUTION GUIDE INFO.
12
SEARCH ENGINE
CONTENT MANAGEMENT INFO.
11
REFERENCE TABLE STORAGE UNIT
14
CONTENT PACKAGING UNIT
KEYWORD
DISTRIBUTION PACKAGE
15
COLLECTION CONTROL UNIT
PURCHASE FEE FOR PLAYBACK RIGHTS
13
CONTENT STORAGE UNIT
MUSIC CONTENT
CONTENT MANAGEMENT INFO.
DES KEY

FIG. 24


101~108
DISTRIBUTION SERVER
25
COMMISSION PAYMENT CONTROL UNIT
20
COMMUNI-CATION UNIT
24
PURCHASE FEE RECEIVING UNIT
DISTRIBUTION PACKAGE
2a'
PURCHASE FEE FOR PLAYBACK RIGHTS
ID
PURCHASE FEE TABLE FOR PLAYBACK RIGHTS
23
CONTENT PACKAGING UNIT
21
ID
DES KEY
MUSIC CONTENT
CONTENT / DES KEY STORAGE UNIT